

rotring
NC-scriber

CS 50

Operating Instructions

Art. 691 170

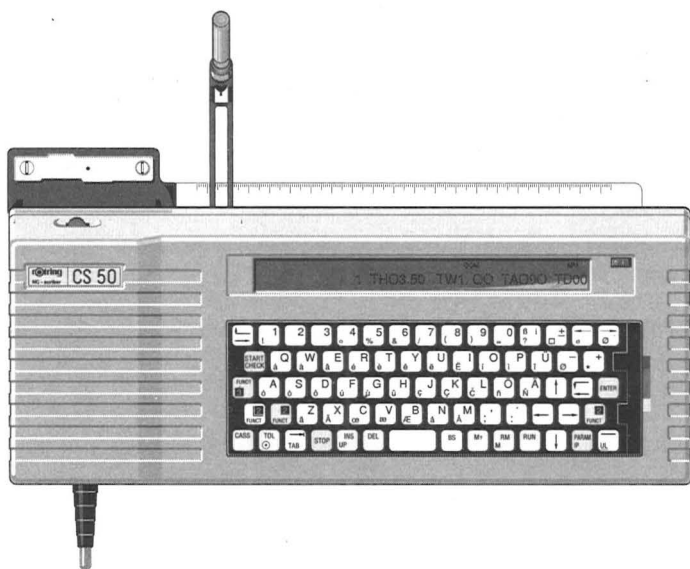
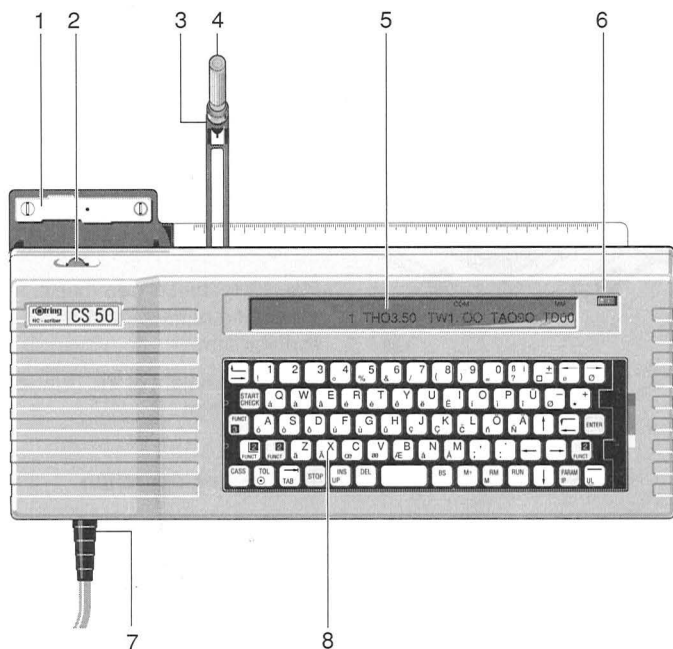


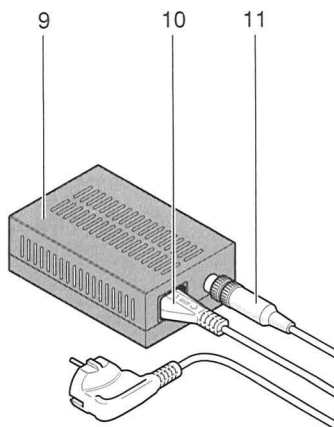
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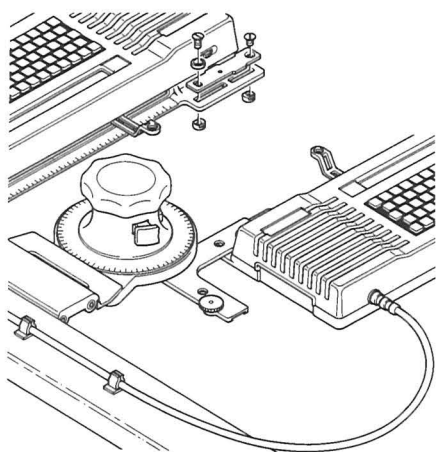
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1.1 The NC-scriber CS 50



- 1 Chuck plate for attachment to drafting head
- 2 Height adjustment for the scribing tool
- 3 Scribing arm
- 4 Technical pen with standard thread or rotring rapidoplot MPP 5P
- 5 LCD for input control
- 6 ON/OFF switch
- 7 Supply cable
- 8 Input keyboard





1.2 Attachment to the Drafting Head

The NC-scriber comes with chuck plates fitting most drafting machines.

The elongated holes in the chassis make it possible to use also the chuck plate of the drafting machine's ruler.

1.3 Inserting the Scribing Tool

Insert a technical pen (barrel removed) or the rotring rapidoplot MPP 5P into the scribing arm.

Adjust the height of the drawing nib to about 1.5 mm.

1.4 Starting operation

Switch on power and press **START CHECK**. The NC-scriber is ready for operation.

Action/Input

Display

Result

Turning on

START
CHECK

CS 50 XXX 1.X 4KB

Software version

Memory capacity

TEXT
TH03.50 ♦ TW1.00 ♦ TA090 ♦ T/

Character height
(3.5 mm)

Character
width
(factor 1)

Inclination
(vertical)

Text follows

1.5 Keyboard occupation

The keys offer up to 3 functions.

The first function is executed directly.







The second and the third functions are available after pressing the corresponding function key.





1.6 Status Display

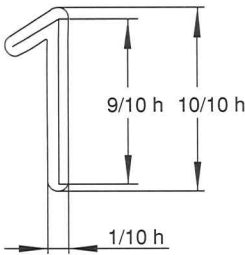
Functions selected via keyboard and shown on the LCD:

Display shows	Meaning
 2.FUNCT	The next character is capitalized
 2.FUNCT FIX	All following characters are capitalized
 3.FUNCT	Special character, in the lower left corner of the key
 CASS	Without function
 TOL	The tolerance function is activated
 INS	Characters are inserted into memory

Other functions which can be selected via the parameter menu:

Display shows	Meaning
MONITOR	Line memory
INS	Insert during memory correction
RM?	Memory display on LCD
TEXT	Text mode
COM	Command mode
INCH	Measuring unit: inch
MM	Measuring unit: mm
UP	Operating mode with pen up

The function keys are located at the same positions on all keyboards.



2.1 Input and Display

To attain precisely the selected character height of a standard font, e. g. ISO 3098/I, use a pen of line width 1/10 h.

Max. character height:

Capital letters 30 mm

Capital letters with diacritical marks
25 mm.

Action/Input	Display	Result
<div>A</div> <div>B</div> <div>C</div> <div>D</div>	<div>TEXT</div> <div>abcd</div>	abcd
<div><div>2</div><div>FUNCT</div></div> <div>A</div> <div>B</div> <div>C</div>	<div>2.FUNCT</div> <div>TEXT</div> <div>Abc</div>	Abc
<div><div>2</div><div>FUNCT</div></div> <div>A</div> <div>B</div> <div>C</div>	<div>2.FUNCT</div> <div>FIX</div> <div>TEXT</div> <div>ABC</div>	ABC
<div><div>FUNCT</div><div>3</div></div> <div>;</div> <div><div>FUNCT</div><div>3</div></div> <div>:</div>	<div>3.FUNCT</div> <div>TEXT</div> <div>;</div> <div>:</div>	; :
<div><div>↵</div></div>	<div>TEXT</div> <div>↵</div>	Line change
<div><div>FUNCT</div><div>3</div></div> <div><div>↶</div></div>	<div>3.FUNCT</div> <div>TEXT</div> <div>↶</div>	Return to start of line
<div><div>↶</div></div>	<div>TEXT</div> <div>↶</div>	Return to start of 1 st line
<div><div>FUNCT</div><div>3</div></div> <div><div>↷</div></div>	<div>3.FUNCT</div> <div>TEXT</div> <div>↷</div>	Move to right end of line

Action/Input	Display	Result						
		 Shift: 1/10 TH Hold down key: Moving						
<p>To position the scribing arm:</p> <div> Set TAB</div> <div> Reach TAB</div> <div> Delete TAB</div>		<p>Tabulator, max. 40 TABs</p> <table><tr><td></td><td>TAB</td><td>TAB</td></tr><tr><td>acemogpj adspry dbeaejm jlsanchez</td><td>kcdmen kcvmnw lweop xfcksuv</td><td>gphiq uldwbc ulwnoyz skcmec</td></tr></table>		TAB	TAB	acemogpj adspry dbeaejm jlsanchez	kcdmen kcvmnw lweop xfcksuv	gphiq uldwbc ulwnoyz skcmec
	TAB	TAB						
acemogpj adspry dbeaejm jlsanchez	kcdmen kcvmnw lweop xfcksuv	gphiq uldwbc ulwnoyz skcmec						
<div> Hold down key</div> <div> Hold down key</div>	 	<p>abcdefg _____</p> <p>abcdefgh _____</p>						
<div> </div> <div> </div> <div> </div>	 	<p>m^2</p> <p>H_2O</p> <p>For tolerance indications see page 15.</p>						

2.2 Parameters Menu

		COM	MM
<u>1</u>	THØ3.5Ø	TW1.0Ø	TAØ9Ø
			RTØ0Ø

Menu line Character height

Character width*

Italics*

Rotation*

Factor 0.7

75°

000= 0°

Factor 1.0

90°

090= 90°

Factor 1.4

105°

			COM	MM
<u>2</u>	MIØ	FRØ	IHØ	PS2
				TPØ

Menu line

Mirroring*

Frame*

Unit of

Writing

Text alignment*

0 = OFF

R = Rectangle

measurement*

speed*

0 = OFF

1 = ON

C = Circle

0 = mm

1 = Slow

R = Flush right

0 = Execution

1 = inch

2 = Normal

L = Flush left

M = Centered

B = Justified

			COM	MM
<u>3</u>	MOØ	CPØ	CT4	ISO 3Ø98/I

Menu line

Monitor*

Raster spacing*

Fonts*

0 = OFF

0 = OFF

CT1 DIN 17 T (techn. characters/keyboard)

1 = ON

1 = ON

CT2 UNIVERSAL

CT3 ISO 3098 T (techn. characters/keyboard)

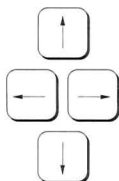
CT4 ISO 3098/I

* Parameters can also be selected with spacebar.

2.3 Selecting Parameters from the Menu



Menu line 1 appears.



The 1st method

Use the cursor keys to step through the menu and overwrite the parameters.

Vertical Status lines (1 to 3) upwards or downwards.

Horizontal The cursor moves to the next selectable parameter.



The 2nd method

Press **PARAM** : Menu line 1 appears. For other menu lines, press 2 or 3 as required.



The 3rd method

PARAM and key in the parameter codes (e. g. **RT** for rotate). The cursor moves directly to the selectable parameter.



Spacebar for parameter options

Most parameters have default values which can also be selected by pressing the spacebar.

Some parameter **values** have to be entered **directly** (see also Sect. 2.2).








Press **ENTER** key to confirm changed parameters.



Any procedure is immediately aborted.


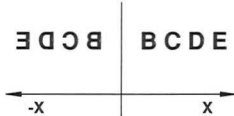

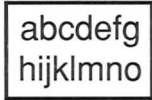


2.4 Menu 1: Character Height - Width - Italics - Writing Direction

<u>1</u>	TH03.50	TW1.00	TA090	RT000
		COM		MM

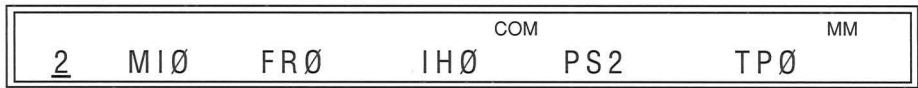
Action/Input	Display	Result
<p>Character height</p> <p>Range: 1 to 30 mm</p> <p>Example: Character height 12.5 mm</p> <p>Note: Make room for higher characters Press "Start of 1st line" key</p> 	<p>TH 03.50</p> <p>TH 12.50</p>	<p>abcdefghijklm</p> <p>abcde</p>
<p>Extended/condensed writing</p> <p>Range: 0.01 to 9.99</p> <p>Option: 0.70 - 1.00 - 1.40</p> <p>Example: Condensed 0.70</p> 	<p>TW 1.00</p> <p>TW 0.70</p>	<p>abcdef</p> <p>abcdef</p>
<p>Italics</p> <p>Range: 75° - 90° - 105°</p>  	<p>TA090</p> <p>TA105</p> <p>TA075</p>	<p>abcdef</p> <p>abcdef</p> <p><i>abcdef</i></p>
<p>Writing direction</p> <p>Rotate direction</p> 	<p>RT000</p> <p>RT090</p>	<p>abcdef</p> <p>abcdef</p>

Menu 2: Mirroring - Frame

2	MIØ	FRØ	IHØ	PS2	TPØ
---	-----	-----	-----	-----	-----

Action/Input	Display	Result
Mirroring (MI) Mirroring text. 	MIØ MI1	OFF  ON
Framing text If the scribing arm is in the first line, press the "line change" key. Frame, rectangular: Enter text. Example: abcdefg  hijklmno Execute frame.	FRØ FRR FRØ	OFF ON 
Frame, round corner: Enter text. Example: abcdefg  hijklmno Execute frame. Text alignment functions (Menu 2, TP) apply here.	FRC FRØ	ON 

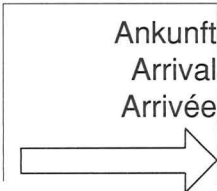
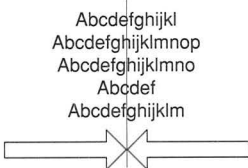

Menu 2: Measuring Unit - Writing Speed - Text Flush Left



Action/Input	Display	Result
Measuring unit mm	<div>IHØ</div> <div>The display shows "MM"</div>	<div>metric</div> <div>Character height, lines, circles, coordinate system.</div>
Measuring unit inch	<div>IH1</div> <div>The display shows "INCH"</div>	<div>inch</div> <div>Character height, lines, circles, coordinate system.</div>
Writing speed	<div>PS2</div>	<div>ca. 2 cm/s</div>
Writing speed reduced	<div>PS1</div>	<div>ca. 0.5 cm/s</div>
<div>Text alignment</div> <div>Flush Left</div> <div>1. Position the scribing arm.</div> <div>2. Set left aligned.</div> <div>3. Enter text.</div> <div>4. End of text alignment.</div>	<div>TPØ</div> <div>TPL</div> <div>TPØ</div>	<div>OFF</div> <div>Ankunft</div> <div>Arrival</div> <div>Arrivée</div> <div>ON</div> <div>←</div> <div>OFF</div>




Menu 2: Text Flush Right - Text Centered - Justified Text

<u>2</u>	MIØ	FRØ	IHØ	COM	PS2	TPØ	MM
----------	-----	-----	-----	-----	-----	-----	----

Action/Input	Display	Result
Text alignment Flush Right 1. Position the scribing arm. 2. Set right aligned. 3. Enter text. 4. End of text alignment.	TPR TPØ	ON OFF 
Text centered 1. Position the scribing arm. 2. Enter text. 3. End of text alignment.	TPM TPØ	
Justified text 1. Enter block width in mm (e. g. 60 mm). 2. Enter text. After pressing the line feed key the line will be scribed. 3. End of text alignment.	TPBØØØ.Ø TPBØ6Ø.Ø TPØ	ON OFF  <p>Airport, airport, airport, airport, airport, airport, air</p> <p>Text justification is a style with left and right margins possible through extending or compressing the characters of a line.</p>

2.6 Menu 3: Monitor - Raster-Size Characters



Action/Input	Display	Result
Monitor OFF	MOØ	OFF
Monitor ON	MO1 The display shows "MONITOR"	ON Line memory is activated
Text can be entered line by line.  or 	ABCDE	Input is shown on the display The displayed text is written
Raster-size characters	CPØ	OFF
Raster-size ON ISO 3098 A = 0,8 x TH DIN 17 A = 1,0 x TH UNIVERSAL A = 1,0 x TH	CP1	ON 

Menu 3: Writing Fonts

		COM		MM	
3	MOØ	CPØ	CT4	ISO 3Ø98/I	

Action/Input	Display	Result
Selecting a font*		Font
Keyboard: "TW technical" Art. 691 154	CT1	DIN 17T
Keyboards: "TW" Art. 691 153 "alpha" Art. 691 155	CT2	UNIVERSAL
Keyboard: "TW technical" Art. 691 154	CT3	ISO 3098T
Keyboards: "TW" Art. 691 153 "alpha" Art. 691 155	CT4	ISO 3098/I
* The ISO 3098/I font remains available even after OFF/ON and START CHECK unless another default font parameter is selected.		

2.7 Setting Default Parameters

Individual parameters can be set in the "default value memory". These parameters are automatically selected after **START CHECK**.

Example:

Font: "UNIVERSAL" (CT2)




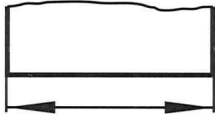









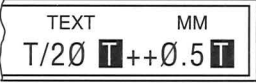





































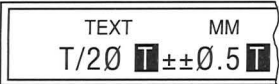
Character height: (TH) 3 mm

Extended: (TW) Factor 1.40

Italic: (TA) 75°

Action/Input	Display	Result
<div><div>FUNCT</div><div>3</div><div>RM</div><div>M</div><div>S</div><div>T</div></div>	<div><div>COM</div><div>MM</div><div>1</div><div>TH03.50</div><div>TW1.00</div><div>TA090</div><div>RT000</div></div>	
<div>Character height3 mm</div> <div>Extended1.40</div> <div>Italic75°</div>	<div><div>COM</div><div>MM</div><div>1</div><div>TH03.00</div><div>TW1.40</div><div>TA075</div><div>RT000</div></div>	
<div>Call up menu line 3</div>	<div><div>COM</div><div>MM</div><div>3</div><div>M00</div><div>CP0</div><div>CT4</div><div>ISO 3098/1</div></div>	
<div>CT2 UNIVERSAL</div> <div><div>INS</div><div>UP</div><div>ENTER</div><div>RUN</div><div>M?</div><div>S</div><div>T</div></div>	<div><div>COM</div><div>MM</div><div>3</div><div>M00</div><div>CP0</div><div>CT2</div><div>UNIVERSAL</div></div>	<div>Unchanged parameters are accepted into the default-value memory.</div> <div>New parameters are accepted and will supersede any existing in the memory.</div> <div>The new parameters are now set and confirmed.</div> <div>Display shows start parameters of default memory.</div>

3.1 Dimensioning and Tolerances

Action/Input	Display	Result
<p>Drawing an arrowhead</p> <p> Hold key </p>		
<p>    </p> <p>   </p>		$20^{+0,5}$
<p>     </p> <p>    </p>		$20^{-0,5}$
<p>  </p> <p>    </p> <p>    </p> <p></p>	 	$20^{+0,5}_{-0,2}$
<p>  </p> <p>    </p> <p></p>		$20^{±0,5}$

3.2 Circles - Coordinate Axes

Action/Input	Display	Result
<p>Circle without coordinate axis</p> <p>(max. diameter 45 mm)</p> <p>FUNCT TOL</p> <p>3 ⊙</p> <p>0 2 5 0</p> <p>RUN</p>	<p>MM</p> <p>◆TA090 ◆T/⊙Ø250</p>	
<p>Circle with coordinate axis</p> <p>FUNCT TOL A</p> <p>3 ⊙ A</p> <p>0 2 5 0</p> <p>RUN</p>	<p>MM</p> <p>◆TA090 ◆T/⊙aØ250</p>	
<p>Coordinate axis without circle</p> <p>FUNCT TOL +</p> <p>3 ⊙ +</p> <p>0 2 5 0</p> <p>RUN</p>	<p>MM</p> <p>◆TA090 ◆T/⊙+Ø250</p>	<p>Axis lines for circles smaller than 3.5 mm are executed as full lines.</p>

4.1 Memory

Capacity 4 KByte, sufficient for ca. 3800 characters. The addresses 01 to 99 can be occupied arbitrarily.

Stored data will be retained when power is switched off.

Action/Input	Display	Result
<p>4.2 Activating a Memory</p> <p>Prior to first use of a new NC-scriber, press the following keys to activate the memory:</p> <div><div>FUNCT</div><div>3</div><div>RM</div><div>M</div><div></div><div></div></div>		<p>Note: Activation deletes any information stored in the memory.</p>
<p>4.3 Finding and Opening the Next Memory</p> <div><div>FUNCT</div><div>3</div><div>RM</div><div>M</div><div>0</div><div>0</div></div>	<div><div>X 01 3822</div><div>Free addressCapacity in byte</div></div>	<p>The NC-scriber automatically selects the next free memory.</p>
<p>4.4 Directly Selecting and Opening a Memory Location</p> <p>For example memory 12</p> <div><div>FUNCT</div><div>3</div><div>RM</div><div>M</div><div>1</div><div>2</div></div>		<p>Note: Any contents at this address will be overwritten (and thus deleted).</p>
<p>4.5 Inputs into the Memory</p> <p>Same procedure as with direct operation:</p> <div><div>RUN</div><div>1. Close the memory</div><div>RUN</div><div>2. Output</div></div>	<div><div>TEXTMM</div><div>Abcdefghijk</div></div>	<div>Abcdefghijk</div>



Change
parameters



4.6 Output of Memory Contents

- Call up the memory.
- Enter the address, e. g. 12.
- Output the memory contents.
- Repeat the memory output.

4.7 Changing Parameters During Memory Input

4.8 Reading the Memory Contents

- Enter the memory address, e. g. 12, or **ST** for (start parameter memory, cf. Sect. 2.7).
- Search text (use arrowhead keys).
- Position the cursor.

4.9 Changing the Memory Contents

- Position the cursor.
- Make the deletion (e. g. a character).
- Insert the new character.
- Store the change.
- Output the memory contents.

4.10 Expanded Memory Operations

Basic memory operations, such as input and output, are covered in Sect. 4.1 through 4.9.

In the remaining parts of Sect. 5, the scope of memory operations will be expanded to include some of the functional modes of the NC-scriber.

4.11 Text Mode and Command Mode

These two important modes of operation are useful for input or editing of text, parameters and programming instructions (commands) in the memory. The mode that is activated is indicated by TEXT or COM in the menu line of the display.

4.12 Editing in the Memory

Texts and parameters can be changed in the memory even after it has been closed.

Text is edited in the TEXT mode.

Programming instructions and parameters are edited in the command mode (COM).

4.12.1 To Edit Text

To change a character:

- Overwrite it with the new one.

To delete:

- Press the **DEL** key.

To insert:

- Press the **INS** key (ON/OFF function)
- Key in the text

Press **RUN** to store the changed text in the memory.

4.12.2 To Edit Parameters

Parameters can also be changed within a text. Examples: To stress a word or a text passage by using italics, a different font or a different character height.

- Place the cursor to the right of the insertion.
- Press the **INS** key.
- Press **ENTER**.

The NC-scriber is now in the COM mode. A diamond (lozenge) sign appears ahead of the cursor position, followed by several question marks which are superimposed on the text that follows.

- Key in the parameter and confirm with **ENTER**.

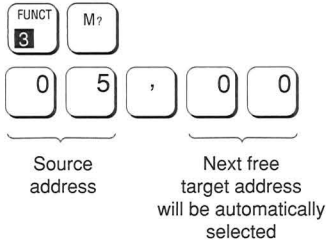
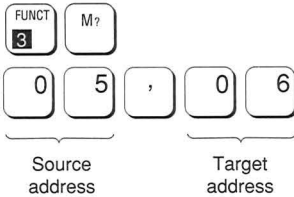
A diamond sign appears on the LCD.

- Key in **T** and **/** (for "Text to follow").

The NC-scriber is now again in the TEXT mode; the question marks disappear.

Press **RUN** to store the changed program in the memory.

Press **RUN** again for memory output.



RUN

RUN

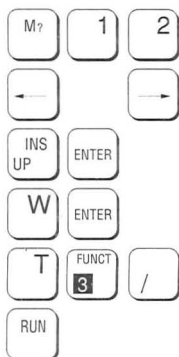
4.13 Copying and Editing the Memory Contents

The contents of one memory (source memory) can be copied into another memory (target memory) and edited.

The source memory contents thus remain unchanged.

Copying a memory

- Copy the memory to be changed.
- Enter the source and the target address
- or enter the source address and copy into the next free address.
- Make the changes.
- Close the memory; the changes are transferred to the target address.
- Memory output.



4.14 WAIT Command in a Program

The "Wait" command (**W**) in a program interrupts the written memory output, which can then be complemented with additional data (e.g. variables) keyed in and written out directly. Parameters can also be changed at this time.

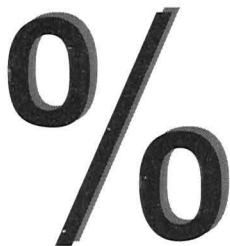
To continue memory output, press **RUN**. "W" commands can be keyed in directly during memory input or inserted later.

4.14.1 Entering "W" Command during Memory Input

- Press 3rd **FUNCT** and **IP**.
- Key in **W** ("Wait" command).
- Press **ENTER**.
- Continue memory input.

4.14.2 Belated Input of "W" Command

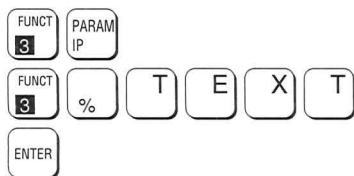
- Call up memory for editing (**M?** and memory address).
- Place the cursor to the right of the insertion.
- Press **INS** and **ENTER**.
- Key in **W** ("Wait" command) and **ENTER**.
- Key in **T/**.
- Close memory with **RUN**.



4.15 Comment in a Program

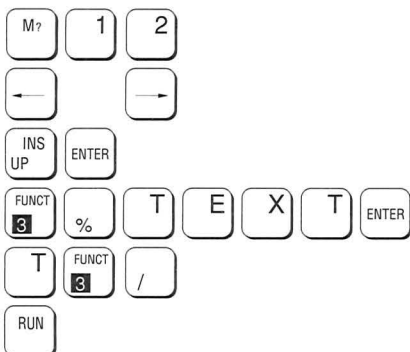
Comment (indicated in the program by %) can be a word used to quickly recognize on the LCD any desired element of lengthy memory contents.

When reading the contents on the LCD, use the 2 dimensioning-arrow keys to make the cursor jump to the left (or right) from one comment to the very next.



4.15.1 Entering Comment during Memory Input

- Press 3rd **FUNCT** and **IP**.
- Key in % and the comment, e. g. a word.
- Press **ENTER**.
- Continue memory input.



4.15.2 Belated Input of Comment

- Call up memory for editing (**M?** and memory address).
- Place the cursor to the right of the insertion.
- Press **INS** and **ENTER**.
- Key in % and the comment.
- Key in **T/**.
- Close memory with **RUN**.

4.16 A Programming Example

Task

A framed area of text is to be programmed, one part of which is fixed, the other variable and to be filled in upon call-up.

Upon memory call-up the scribing tool is to wait – regardless of its actual position – at the beginning of the variable text until the **RUN** key is pressed.

Functions used in this task:

Frame (**FRR**)

Tabulator (**TAB**)

Memory output/scribing tool stop (**W**) at the beginning of the variable text until it is keyed in and **RUN** is pressed.

Boiler Operating Data

Pressure:	<input type="text"/>
Temperature:	<input type="text"/>
Inspecting Cycle:	<input type="text"/>

Boiler Operating Data

Pressure:	60 bar
Temperature:	80 °C
Inspecting Cycle:	200 h

4.16.1 Programming Procedure

1. Switch on power and press **START CHECK**.
2. Open up memory, e.g. 03.
3. Call up the parameter menu (**PARAM**).
4. Select the character height (menu 1, TH05.00) and confirm with **ENTER**.
5. Fix the starting point for memory output: Press "Start of 1st line, upper left".
6. Key in the "WAIT" command: 3rd **FUNCT**, **IP**, **W**, **ENTER**.
7. Call up the parameter menu (**PARAM**).
 - Frame, rectangular, (menu 2, **FRR**).
 - Select font.
8. Press **ENTER** to confirm the parameter.
9. Key in **Boiler Operating Data**, press "line change".

Boiler Operating Data

Pressure:	60 bar
Temperature:	80 °C
Inspecting Cycle:	200 h

Programming example of Sect. 4.16

10. Set new character height (**PARAM**, menu 1, TH04.00, **ENTER**).

11. Key in **Pressure**:

12. Use the spacebar to move about 10 spaces to the **TAB** position for the first variable data, e. g. **60 bar**.

13. Fix the **TAB** (3rd **FUNCT**, **TAB**).

You can also use the directional arrows to move to the **TAB** position, in which case the distance moved will be stored as a numerical value.

14. Key in the Wait command (3rd **FUNCT**, **IP W**, **ENTER**).

15. Press "line change".

16. Key in **Temperature**: and press **TAB**.

The scriber arm moves to the **TAB** position that was fixed in steps 12 & 13.

17. Key in the Wait command (3rd **FUNCT**, **IP W**, **ENTER**).

18. Press "line change".

19. Key in **Inspecting cycle**: and press **TAB**.

The scriber arm moves to the **TAB** position.

20. Key in the Wait command (3rd **FUNCT**, **IP W**, **ENTER**).

21. Make the frame (**PARAM**, menu 2, **FR0**).

22. Press **RUN** to close the memory.

23. Press **RUN** to start memory output.

The stored text will be written. The scriber arm stops at the insertion point for the pressure variable (**60 bar**), which you can then key in directly. To continue memory output, press **RUN**.

If the **TAB** positions are not exact, add or delete spaces during editing.

If you have set the **TABs** with the directional keys, just change the distance value on the display.

Boiler Operating Data

Pressure: 60 bar
Temperature: 80 °C
Inspecting Cycle: 200 h

M? 0 3

4.16.2 To Read and Edit the Programmed Example in Memory

If you have made an error during programming, you can call up the memory contents on the LCD for editing.

● Call up memory for reading (M? 03).

Display

03 25559 TH003.5 ♦TW1.00 ♦TA090 ♦RT000 ♦W

Memory No. - Remain. storage capacity - Standard parameter for font (TH, TW, TA, RT) - Waiting for memory input

♦T/ ♦TH05.00 ♦T/ ♦W ♦FRR ♦ ♦CT2 ♦T/Boiler Operating Data ♦

Text mode ON* - Font parameter - Start of 1st line - Wait command - Rectangular frame ON - Font CT2 - Text start: *Boiler Operating Data* - Line change

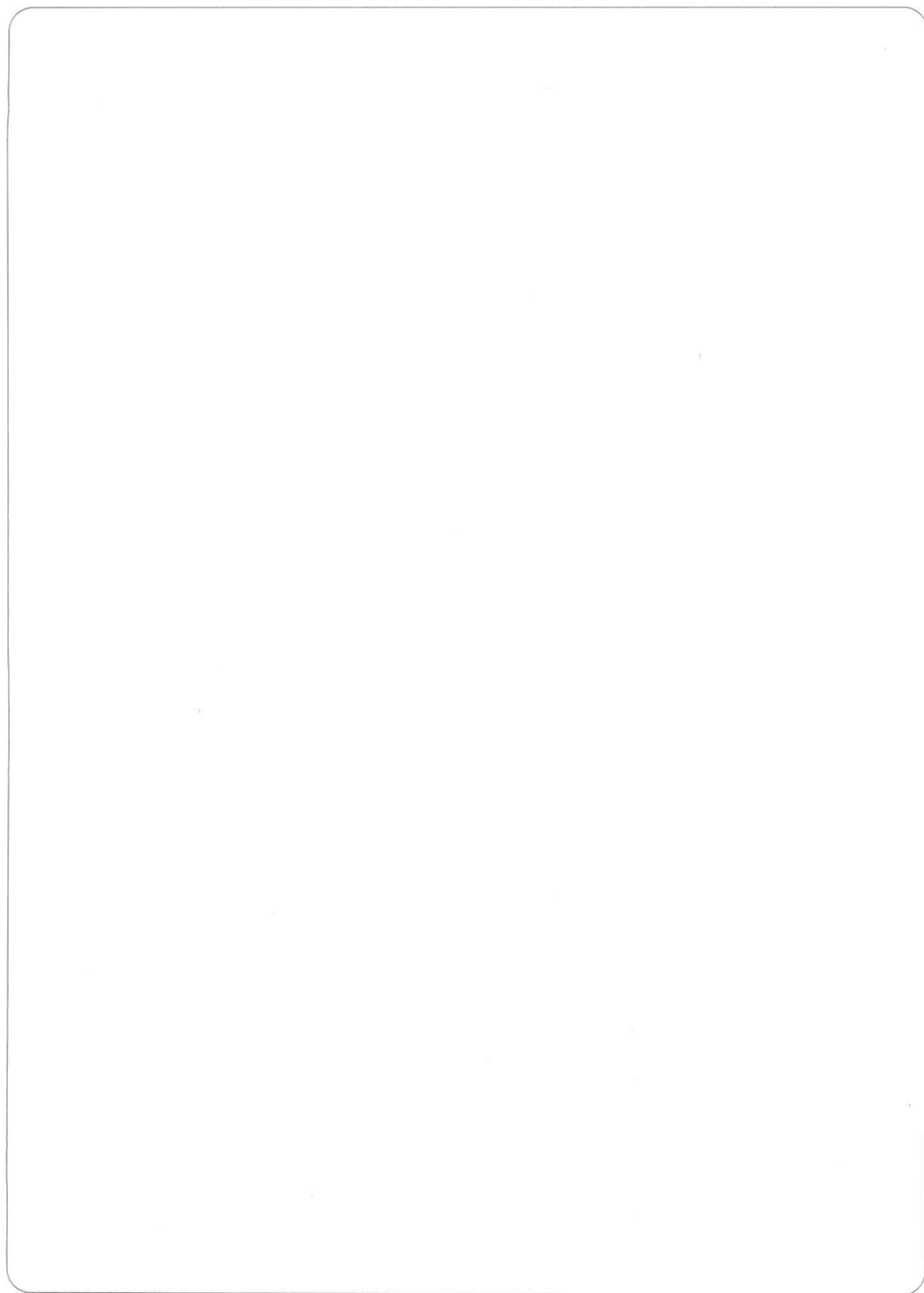
TH04.00 ♦T/Pressure: (about 10 spaces) ♦W ♦T/ ♦

Character height 4 mm - Text start: *Pressure:* - Move to TAB - Set TAB - Wait command - Text mode ON* for insertion of variable text - Line change

Temperature: ♦W ♦T/ ♦ Inspecting cycle: ♦W ♦T/ ♦FR0 ♦T/ ♦E ♦

Text start: *Temperature:* - TAB - Wait command for text - Text mode ON* - Line change - Text: *Inspecting cycle:* - TAB - Wait command for text - T/ = Text mode ON* - FR0 = Make frame - Text mode ON* - End of program

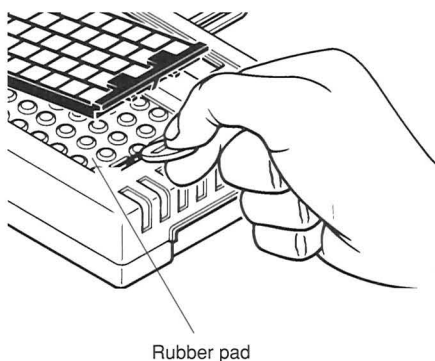
* Text mode ON is set automatically during memory input if a parameter input in the COM mode (3rd FUNCT, IP) has been concluded with the ENTER key. T/ indicates that the system is again in the text mode.





5.1 Standard Keyboard

International keyboard with typewriter layout.



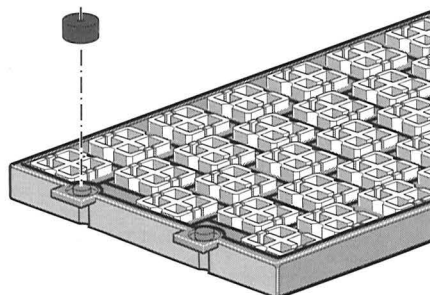
5.2 Exchanging the Keyboard

Procedure:

- Insert a coin into the slot at the right side of the keyboard and use it as a lever.
- Pull off the keyboard towards the right.
- Install a new keyboard.
- Press **START CHECK**.

Note

Never remove the rubber pad that is underneath the keyboard!



For location of the contact plugs see Sect. 5.4.

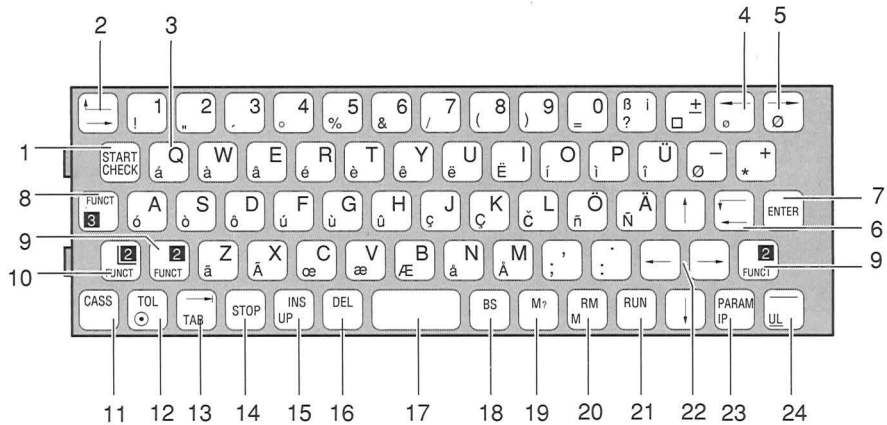
A contact plug underneath the left-end tabs of the keyboard automatically makes the switchover on the control PCB.

If the contact plug is missing, the system recognizes the standard "TW" keyboard.








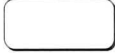




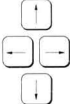


Important:

Call up the desired internal font before you start writing, e. g. CT3, Menu line 3.

5.3 Key Functions



Key	No.	Function	
	1	DIRECT	Scribing tool moves to the zero coordinate point, character height 3.5 mm, vertical, or start parameter ST.
	2	1 st AND 2 nd FUNCTION	Scribing tool moves to the start of the 1 st line.
		3 rd FUNCTION	Scribing tool moves to the end of the same line.
	3	1 st FUNCTION	Character as lowercase letter.
		2 nd FUNCTION	Character as capital letter.
		3 rd FUNCTION	Special character or diacritical mark.
	4	1 st AND 2 nd FUNCTION	Draw left dimensioning arrow.
		3 rd FUNCTION	Special character.
	5	1 st AND 2 nd FUNCTION	Draw right dimensioning arrow.
		3 rd FUNCTION	Special character.
	6	1 st AND 2 nd FUNCTION	Scribing tool moves to start of next line.
		3 rd FUNCTION	Scribing tool moves to start of same line.
	7	Confirm changed parameters.	
	8	ON/OFF FUNCTION	Single character or symbol of 3 rd function.
		Display: 3.FUNCT	
	9	ON/OFF FUNCTION	Single capital letter or symbol of 2 nd function.
		Display: 2.FUNCT	

Key	No.	Function
	10	ON/OFF FUNCTION Continued capital letters or symbol of 2 nd function. Display: 2. FUNCT FIX
	11	Without function.
	12	1 st AND 2 nd FUNCTION (ON/OFF) .. Tolerances, exponents, indices 3 rd FUNCTION Display: TOL Circle program
	13	1 st AND 2 nd FUNCTION Tabulator: Move to TAB 3 rd FUNCTION or delete TAB
	14	Instant stop of writing or drawing process.
	15	1 st AND 2 nd FUNCTION Insertion of character or symbol into a memory already programmed. 3 rd FUNCTION (ON/OFF) Display: INS Scribing tool motion with PEN UP.
	16	Deletion of character in memory or on display, provided it has not yet been written.
	17	Spacebar during text mode. "Leafing" in the parameter menu.
	18	Backspace: Scribing tool moves back by 1 character (max. 16 characters). Also: Corrections during memory input.
	19	1 st FUNCTION Memory query for reading or editing contents, 01 - 99, ST (cf. Sect. 2.10). 3 rd FUNCTION Copy memory contents.
	20	1 st AND 2 nd FUNCTION Call up memory for output of contents. 3 rd FUNCTION Call up memory to enter an address.
	21	Instruction for memory output, drawing a circle.
	22	Cursor keys for "leafing through" the menu lines; moving the scriber arm or the cursor; and for reading memory contents.
	23	1 st AND 2 nd FUNCTION Calling up the parameter menu. 3 rd FUNCTION Switch to command mode for direct parameter input.
	24	1 st AND 2 nd FUNCTION Drawing a line. 3 rd FUNCTION Underline text.

5.4 Keyboard for the NC-scriber CS 50

Typewriter keyboard with QWERTY layout

(for fonts CT2 and CT4, Menu line 3)



Art. 691 153: Keyboard "TW"

QWERTY keyboard with important mathematical symbols

(for fonts CT1 and CT3, Menu line 3)

(To make letters with ^, ^ and ^, press A, E or O for the letter, then 3rd FUNCT and á, à or â for the mark.)



Art. 691 154: Keyboard "TW technical"

Alphanumeric character layout

(for fonts CT2 and CT4, Menu line 3)



Art. 691 155: Keyboard "alpha"

Contact plug in place

5.5 Error Messages

Error message	Meaning
ERROR A	Character inclination exceeded
ERROR C	Key pressed in wrong sequence
ERROR CT	Selected font not available
ERROR D	Memory contents deficient
ERROR E	Memory (address) empty
ERROR F	Line length exceeds available area
ERROR H	Character height exceeded
ERROR O	Scale too large
ERROR ☉	Wrong diameter input
ERROR X	Memory full, further inputs are ignored
ERROR KEY	Wrong key input
PRESS START	Before pressing START CHECK a key was already pressed

6.1 Specifications

Radio shielding: The CS 50 NC-scriber meets the applicable regulations of the *Deutsche Bundespost*.
The official regulations 10467/1984 of the *Bundesminister für das Post- und Fernmeldewesen* are observed.

Operating environment: Temperature 15 °C - 30 °C, humidity max. 90 %

Power requirements: 110 V to 220 V ± 10 %, 50/60 Hz

Power consumption: 40 W

Operating voltage, NC-scriber: +5 V, +15 V

Connecting cable, NC-scriber: Length 3.5 m

Range of the scribing arm: 190 x 45 mm

Character height: 1.0 to 30 mm in 0.1 mm increments

Character width: Variable, \pm in % units

Accuracy: Line resolution of 0.01 mm

Writing/drawing speed:

Normal operation: ca. 2.0 cm/s

Step 1: ca. 0.5 cm/s

Step 2: ca. 2 characters per second with
TH = 3 mm

Memory: Capacity 4 KByte for max. 3800 instructions,
99 memory addresses

Size and weight:

Operating unit

Size: 335 x 168 x 47 mm

Weight: ca. 1500 g

Power supply unit

Size: 50 x 96 x 50 mm

Weight: ca. 588 g